



# ALGAE AS A BIOINIDICATOR-TO STUDY ORGANIC WATER POLLUTION OF RIVER YERALA (VASGADE) DIST-SANGLI MAHARASHTRA (INDIA)

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## ABSTRACT

Alage are one of the most rapid bioindicator of water quality due to their short lifespan, quick response to pollutants. Alagal communities like diatoms and blue green alage effective bioindicators of organic pollution in the Yerala river. The study found that all Sample site had total scores Exceeding more than 20, confirming significant organic pollution. Analysis of water parameters confirm that sampling site 2 highly polluted than site 1, The Findings revealed that the river Surface water quality was adversely impacted by agricultural run of and domestic waste water.

The nutrient overload in the river Yerala causes the environment Favourable for alage growth

**KEYWORDS:** Alage, Bioindicators, Yerala River Pollution Index, Nutrient Overload

## INTRODUCTION

Alage are vital components of aquatic ecosystems which plays crucial role in Maintaining the ecological balance of water bodies, They are widely recognized as bioindicator to study water quality because alage have short life span quick response to pollutants. The alage directly reflect quality in most water bodies (Alpetal2012)

The yerala river in vasagde Sangli district, Maharashtra (longitudinal and latitudinal 16.9710° 74° 5445°E are the coordinates of vasagde) is an important water resource used for mainly agriculture and domestic needs. and used by local flora and fauna. However Agricultural run off contributes to organic water pollution because the fertilizers and pesticide used in from we nitrates, ammonia, phosphorous compound which when mix with water Causes nutritional overload leads to pollution that cause excess alage growth.

This excessive algal bloom can alter dissolved oxygen level and disturb aquatic life

Studying algal composition and presence and density in the yerala river can give valuable insight into the extent of organic pollution as it shows adverse effect on aquatic ecosystem.

By monitoring algae, effective measures can be developed to mitigate pollution, conserve biodiversity, and restore the ecological health of the river. The water quality can be assessed based on alage used as bioindicator which is helpful to reduce pollutions

In present study Palmer (1969) Algal Genus Pollution index were employed to study water quality of river yerala water pollution index is used for evaluation of water pollution This Study is helpful to use alage as a bioindicator to far assessment

of water quality of River Yerala which is sub basin of river krishna in village vasgade district Sangli Maharashtra

## MATERIAL AND METHODS

Sampling method was used for study. Alage samples were collected from the upstream and downstream of the yerala River. which is subbasin of river krishna

The regular monthly collection of alage was made from February 2024 to march 2024 filamentous algal species collected with forceps. Diatoms collected by using tooth brush, macro alage picked up with hand by wearing gloves. The collected algal sample Transferred into plastic bottles and were labelled as Site 1 Site 2. Upstream, downstream respectively

### Preservation of alage

macro alage were preserved in 4% formalin (mason 1967) unicellular alage were preserved in 2 to 3 % formalin

### Laboratory Studies and identification of alage

The microphotographs of alaga species were taken with the camera attach with the microScope (MISSOUM-Japan) specimens of alagal species were identified with the help of authentic literature (Smith 1950, Presscot 19623 Sarode and kamat 1989)

## RESULT AND DISCUSSION

In 1969 Palmer [6] made a Significant attempt to identify and compile a list of algal genera and species tolerant to organic pollution

According to palmer index Score of 20 or more indicates high level of nutrient as organic pollution The present study recorded pollution tolerant genera and species from algal groups. at site 1 and site 2 in the river Yerala.

Agriculture runoff contain excess nutrients like nitrogen and phosphorus in to river which promot growth of alage like chorella seenedemuus oscillatorica which indicate river water polluted.

Genus	Pollution Index
Chlorella	3
Anxistrodesum.	2
Gomphonema	1
Oscillatoria	5
scenedesmus.	4
Closterium	1
Englena	5

**Table 1: Algal genus pollution. Index (Palmere 1969)**

Numerical values for pollution classification of Palmer (1969)

0-10: lack of organic pollution

10-15: moderate pollution

15-20: probable high organic pollution.

20 or more: Confirm high organic Pollution.

Algal Species	Pollution Index
Chlorella vulgaris	2
Euglena grucillis	2
Anxstrodesmusfulcatus.	3
Eugienaviridis	6
Gomphoemparvulum	1
Oscillatorialimosa	4
scenedesmusquadricunda	4

**Table 2: Algal Species pollution Indea - (Palmer 1969)**

Name of algal Genera	Group	Total Points	Site	
			Site 1	Site 2
Chlorella	G	105	+	+
Scenedemus	G	110	+	+
Pediastrum	G	38	+	+
Ulothrire	G	35	+	+
Acosmuriun	G	16	+	+
Anxistrodesmun	G	16	+	+
Oscillatona	B	158	+	+
Spirogura	G	39	+	+
Euglenaacus	F	170	-	+
Gomphonema	D	47	+	+

**Table 3: Pollution tolerant genera of alage from two site al river yerala vasgade, Sangli Maharashtra**

G- Green alage D- Diatom B- Blue green alage

Key “+”= Present “-”= absent

Name of algal Genera	Total Points	Pollution Site	
		Site 1	Site 2
Scenedesmus Quadricacucla	4	4	4

Chlarella Vulgaris	3	3	3
Oscillatoria	5	5	5
Gamphanema	1	1	1
Synedra	2	-	2
Oscillatariatenus	4	4	4
Anrcistrodesmus	3	3	4
Synedraulria	3	3	3
Total Score	20	26	

**Table 4 : Species of alage from site I and II of river yerala Vasagde, Sangli Maharashtra**

Thus overall-Pollution index shows that river water highly organic polluted.

Green alage like Tribunema and diatoms Tabellria also found in some amount.

## CONCLUSION

The current study presents water quality deterioration due to agricultural runoff identifying nitrogen as significant contribute Alage sensitive to water pollution Alage from river shows dominance of chorella vulgaris, scendemus which are considered to be indicator of water pollution.

The pollution tolerant alage - can be used for remediation at domestic waste water.

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